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PATENT APPLICATION
DOCKET NO. 600204464-9

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTOR(S): Yaacov Almog **CONFIRMATION NO.:** 1737
SERIAL NO.: 10/039,481 **GROUP ART UNIT:** 1795
FILED: January 8, 2002 **EXAMINER:** Rodee, Christopher D.
SUBJECT: Toner Particles With Modified Chargeability

To: Examiner Christopher RoDee
Fax 571-273-1388

From: James Lake, Reg. No. 44,854
509-624-4276

SIR:

Revised Proposed Amendment for the Purpose of Interview Only

Serial No. 10/039,481
HP Case No. 600204464-9

In the Claims

Claims 47, 51-58, 63, and 65-74 would be pending in the application with claims 47, 63, and 66 amended, new claims 67-74 added, and claims 59-62 cancelled.

47. (currently amended) An electrostatic imaging process comprising:

(A) forming a charged latent electrostatic image on a photo conductive surface;
and

(B) applying to the photoconductive surface toner particles from a liquid toner, thereby forming an image, wherein the liquid toner comprises:

(a) an insulating non-polar carrier liquid;

(b) at least one charge director; and

(c) toner particles dispersed in the carrier liquid and the at least one charge director, the particles comprising:

(i) a core material comprising a pigmented polymer suitable for use as a toner material in an electrostatic image development application, which is unchargeable by the at least one charge director or which is weakly chargeable by the at least one charge director;

(ii) a coating of at least one ionomer component in an amount effective to impart an enhanced chargeability to the toner particles to an extent that the particles can be used to develop a latent electrostatic image in the electrostatic image development application;

~~(iii) wherein the coating of the at least one ionomer added to the toner particles results in a same chargeability for colors of the pigmented polymer; and~~

(iii) [(iv)] wherein the coating of the at least one ionomer increases the chargeability of the toner particles to greater than 7 to about 103 pmho/cm.

Claims 48-50 (cancelled).

51. (previously presented) The electrostatic imaging process of Claim 47 wherein the at least one ionomer is carboxylic acid based and neutralized with metal salts forming ionic clusters.

52. (previously presented) The electrostatic imaging process of Claim 47 wherein the at least one ionomer is methacrylic acid based and neutralized with metal salts forming ionic clusters.

53. (previously presented) The electrostatic imaging process of Claim 47 wherein the at least one ionomer is sulfonic acid based and neutralized with metal salts forming ionic clusters.

54. (previously presented) The electrostatic imaging process of Claim 47 wherein the at least one ionomer is phosphoric acid based and neutralized with metal salts forming ionic clusters.

55. (previously presented) The electrostatic imaging process of Claim 47 wherein the at least one ionomer is ethylene based and neutralized with metal salts forming ionic clusters.

56. (previously presented) The electrostatic imaging process of Claim 47 wherein the coating comprises less than 20 percent of the weight of the particles.

57. (previously presented) The electrostatic imaging process of Claim 47 wherein the coating comprises a thickness greater than or equal to a monolayer of the at least one ionomer.

58. (previously presented) The electrostatic imaging process of Claim 47 wherein the coating comprises a thickness of greater than 0.02 micrometers.

Claims 59-62 (cancelled).

63. (currently amended) Liquid toners for an electrostatic imaging, comprising:

(A) at least first and second liquid toners of first and second colors, wherein the first and the second liquid toners are configured with pigmented polymers having differently colored pigments and wherein each of the first and the second liquid toners comprises:

- (a) an insulating non-polar carrier liquid;
- (b) at least one charge director; and
- (c) toner particles dispersed in the carrier liquid and the at least one charge director, the particles comprising:
 - (i) a core material comprising a pigmented polymer suitable for use as a toner material in an electrostatic image development application, which is unchargeable by the at least one charge director or which is weakly chargeable by the at least one charge director;
 - (ii) a coating of at least one ionomer component in an amount effective to impart an enhanced chargeability to the toner particles to an extent that the particles can be used to develop a latent electrostatic image in the electrostatic image development application;
 - (iii) wherein the coating of the at least one ionomer added to toner particles in each of the first and the second liquid toners is sufficient to result in a same chargeability for toner particles within the first and the second liquid toners; and
 - (iv) wherein the coating of the at least one ionomer increases the chargeability of the toner particles to greater than 7 pC per particle ~~particle to about 103 pC per particle~~

64. (cancelled).

65. (previously presented) The liquid toners of Claim 63, wherein imparting enhanced chargeability comprises enhancing the chargeability of the core material with the coating by an order of magnitude over chargeability of the core material without the coating.

66. (currently amended) The liquid toners of Claim 63, wherein the coating is used in an amount effective to reverse a polarity imparted on the toner ~~particle~~ particles by the charge director.

67. (new) The liquid toners of Claim 63, wherein the coating of the at least one ionomer increases the chargeability of the toner particles by at least 15 pmho/cm.

68. (new) The liquid toners of Claim 63, wherein the coating of the at least one ionomer increases the chargeability of the toner particles by 15 to 161 pmho/cm.

69. (new) The electrostatic imaging process of Claim 47 wherein the coating is used in an amount effective to reverse a polarity imparted on the toner particles by the charge director.

70. (new) The electrostatic imaging process of Claim 47 wherein the coating of the at least one ionomer increases the chargeability of the toner particles by at least 15 pmho/cm.

71. (new) The electrostatic imaging process of Claim 47 wherein the coating of the at least one ionomer increases the chargeability of the toner particles by 15 to 161 pmho/cm.

72. (new) The electrostatic imaging process of Claim 47 wherein the coating of the at least one ionomer increases the chargeability of the toner particles by 23 to 161 pmho/cm.

73. (new) The electrostatic imaging process of Claim 69 wherein the coating of the at least one ionomer increases the chargeability of the toner particles by 23 to 96 pmho/cm.

74. (new) The electrostatic imaging process of Claim 47 wherein the coating of the at least one ionomer increases the chargeability of the toner particles by 79 to 161 pmho/cm.

Remarks

Claims 47 and 63 would set forth the coating of the at least one ionomer increasing the chargeability of the toner particles to greater than 7 pmho/cm. In the present specification, with no ionomer, Run 1 of Table 3 shows a particle conductivity of 3, BBP and CAP charge directors of Table 4 yield particle conductivities of 1 and 2, respectively, and Run 1 of Table 5 shows a particle conductivity of 7 pmho/cm. Tables 3-5 all show the use of ionomers increasing the chargeability of toner particles. Table 5 shows 10% ionomer increasing particle conductivity by 79 pmho/cm and increasing the amount of ionomer to 20% increasing particle conductivity by 96 pmho/cm. Table 3 also shows that increasing ionomer content produces increasing levels of particle conductivity.

New claims 67 and 70 would set forth the coating of the at least one ionomer increasing the chargeability of the toner particles by at least 15 pmho/cm. Table 4 shows 5% ionomer increasing particle conductivity above the particle conductivity with no ionomer by 15 pmho/cm for CAP charge director. Tables 3-5 show still higher increases.

New claims 68 and 71 would set forth the coating of the at least one ionomer increasing the chargeability of the toner particles by 15 to 161 pmho/cm. Table 3 shows 20% ionomer increasing particle conductivity by 161 pmho/cm.

New claim 72 would set forth the coating of the at least one ionomer increasing the chargeability of the toner particles by 23 to 161 pmho/cm. Table 4 shows 5% ionomer increasing particle conductivity by 23 pmho/cm for BBP charge director.